

Date: Thu, 29 Apr 93 01:42:04 PDT  
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>  
Errors-To: Info-Hams-Errors@UCSD.Edu  
Reply-To: Info-Hams@UCSD.Edu  
Precedence: Bulk  
Subject: Info-Hams Digest V93 #514  
To: Info-Hams

Info-Hams Digest                      Thu, 29 Apr 93                      Volume 93 : Issue 514

Today's Topics:

                    AM Moulation Question  
                    Another AM Question  
                    Cable TV Descrambler Sources?  
Daily Solar Geophysical Data Broadcast for 28 April  
                    Hamfest Help  
Hosstraders Flea Market (Was: Hamfest Help)  
                    Measuring SWR on Open Wire (2 msgs)  
                    Need a copy of PRB1...  
                    Possible to parallel x-formers?? (2 msgs)  
                    Request Mods for IC-W21AT  
                    Side-mounted VHF antennas  
Two-Line Orbital Element Set: Space Shuttle

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>  
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: Wed, 28 Apr 1993 20:49:35 GMT  
From: RICEVM1.RICE.EDU!LINSCOT@rice.edu  
Subject: AM Moulation Question  
To: info-hams@ucsd.edu

In article <16BBCE7A3.LINSCOT@RICEVM1.RICE.EDU>  
LINSCOT@RICEVM1.RICE.EDU (Stephen M. Linscott) writes:

>  
>In article <1993Apr21.224157.3916@csdvax.csd.unsw.edu.au>  
>u1066579@csdvax.csd.unsw.edu.au writes:

>  
 >>  
 >>Hi,  
 >> I have a quick question about AM modulation systems. I wondered why most  
 >>broadcast transmitters modulate the final RF stage? Are there any  
 >>disadvantages to modulating stages ior to the final RF stage.  
 >>Best Wishes,  
 >>Henry.  
 >>Email u1066579@csdvax.csd.unsw.edu.au  
 >>  
 > A few years ago, one of our local 50 KW AM stations replaced their old  
 >RCA transmitter with a modern unit from Harris. It uses pulse width  
 >modulation, and gets 90% efficiency - 55KW in, 50 KW out! I wrote to Harris  
 >about the technique, and the engineer who designed it sent a block diagram  
 >and description. The modulator is a big switching tube in series with the  
 >final. There are four tubes, including two drivers, a final, and the switch  
 >tube. Quite a change from the HUGE modulation choke in the old rig! If  
 >anyone cares how they do it, I will dig out the description and post.  
 >

Well, several people asked so here goes: this info is from a paper by Edward C. Westenhaver of Harris Corp., titled "Fundamentals of PDM". PDM stands for Pulse Duration Modulation. You can think of the PDM modulator as a voltage regulator connected in series with the final. The RF chain is conventional: osc., driver, final. The low level stage of the modulation uses a 75 kHz square wave to sample the audio. The width of the pulses carry the audio information, and this pulse train is amplified and fed to the modulator. The plate voltage fed to the final and modulator in series is twice the rated voltage for the final. If a train of pulses of equal width is fed to the modulator, the modulator tube will drop half the total voltage, and the final has rated plate voltage. If the "on" pulses are longer than the "off" pulses, the modulator drops less voltage and the final gets more. If the modulator is all the way on, the final gets the full plate voltage ( 2X rated), which is the same as 100% positive peak. When the modulator is shut off, the final gets no plate voltage, a 100% negative peak. There is a low pass filter between the modulator and the final to keep the 75kHz out of the final. The technique was introduced in 1967 - I don't know who else uses it, but Harris apparently does. I hope I got the basics across - the paper has circuit details, theory, etc. I have no connection with Harris - just interested in this concept.

73, - Steve - W5EGP

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 Date: Wed, 28 Apr 1993 19:55:19 GMT  
 From: elroy.jpl.nasa.gov!usc!sdd.hp.com!hpscit.sc.hp.com!news.dtc.hp.com!srngenprp!  
 alanb@decwrl.dec.com  
 Subject: Another AM Question

To: info-hams@ucsd.edu

Lyle Kraft (lkraft@core.rose.hp.com) wrote:

: Hello gang,

: A colleague and I were pondering this scenario:

: Suppose you generate a single carrier signal with no modulation, and  
: feed this up to your x-element beam. So far, you are radiating a  
: signal that has zero bandwidth in some fixed direction. OK, now  
: say you rotate your antenna at a rate of, say, 1000 revolutions per  
: second. To a distant observer, will this signal now appear to have  
: sidebands spaced 1 KHz away from the carrier since he now only sees  
: a carrier that "bursts" at a 1KHz rate?

Yes

: Remember, we are still only  
: generating a single, unmodulated carrier. Are the "sidebands" a  
: figment of the receiver?

No, they are really there. It doesn't matter how you modulate the carrier, you can't have modulation without generating sidebands. You'd get the same effect by transmitting an unmodulated carrier and quickly switching the antenna in and out at a 1 kHz rate. (For as long as the transmitter stayed alive!)

AL N1AL

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Date: Wed, 28 Apr 1993 21:45:37 GMT

From: usc!sdd.hp.com!hpscit.sc.hp.com!cupnews0.cup.hp.com!news1.boi.hp.com!hp-pcd!  
hp-vcd!egurney@network.UCSD.EDU

Subject: Cable TV Descrambler Sources?

To: info-hams@ucsd.edu

Brian Kwong (bkwong@unixg.ubc.ca) wrote:

>>I have always been curious - other than by SEEING the box, can they really  
>>tell? I've heard stories ranging from them connecting something to the cable  
>>that can detect bootleg boxes to vans driving down the street equipped with  
>>spectrum analyzers to sting operations where they broadcast a bogus offer for  
>>something free on a channel that would otherwise be encrypted and wait and see  
>>who calls. Is any of this true (except for the sting, which they actually did  
>>in New York)?

>What some cable companies have done is send a signal spike through the cable  
>system. Their own boxes obviously would be protected somehow, but the bootleg

>boxes would be affected. When the person calls in to report problems with the  
>signal, the police would be on their way.

This is all "urban legend". A cable company could not send a "spike" which physically damages anything, or people with cable-ready TVs and VCRs would ALSO have damaged components, not just the "pirate" decoders.

The stories about sting operations where brain-dead people call 800 numbers for too-good-to-be-true free T-shirts are true, the stories about vans with weird antennas are true (leak detection as required by the FCC!) and detecting unauthorized cable taps (but not necessarily decoders) via time-domain reflectometry are also true. But "bullets" are a story invented by cable co's to scare people. It happened in one instance where the cable co. reverse engineered a pirate decoder which a lot of people were apparently using, from which they found a way to disable these "pirate" boxes with the normal data stream. Simple as that.

More info from the rec.video.cable-tv FYI:

.....Test Chips / "Bullets".....  
So-called "test chips" are used to place single-piece converters (that is, units with both a tuner and a descrambler) into full service. There are a number of ways to accomplish this, but in most cases, the serial number/market code for the unit is set to a known "universal" case, or the comparison checks to determine which channels to enable/disable are bypassed by replacing an IC in the unit. The latter type of chip is superior because it cannot be disabled, even if the cable company finds out about a "universal" serial number. (When that happens, the cable company has the potential to disable the converter anyway, with a so-called "bullet".) The "bullet" is nothing more than the normal cable data stream with the appropriate code to disable a converter which has this serial number, or which doesn't have this market code, or... etc. The "bullet" is NOT a harmful high-voltage signal or something as the cable companies would like you to believe -- if it was, it would damage anyone with a cable-ready TV or VCR connected to the cable (not something the cable company wants to deal with!) The only way to get "caught" by such a signal is to contact the cable company and tell them your illegal descrambler just quit working for some reason. :-) Not a smart thing to do, but you'd be surprised (especially if it's someone else in the house who calls, like a spouse, child, babysitter, etc.)

Ed

--

Ed J. Gurney N8FPW Hewlett-Packard Company Vancouver (USA!) Division  
egurney@vcd.hp.com #include <standard-disclaimer.h>  
"Failures are divided into two classes-- those who thought and never did,

and those who did and never thought." John Charles Salak

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Date: 29 Apr 93 04:00:31 GMT  
From: news-mail-gateway@ucsd.edu  
Subject: Daily Solar Geophysical Data Broadcast for 28 April  
To: info-hams@ucsd.edu

!!BEGIN!! (1.0) S.T.D. Solar Geophysical Data Broadcast for DAY 118, 04/28/93  
10.7 FLUX=113.6 90-AVG=131 SSN=062 BKI=0110 2221 BAI=003  
BGND-XRAY=B2.8 FLU1=8.7E+05 FLU10=1.4E+04 PKI=2111 2221 PAI=005  
BOU-DEV=004,005,006,004,012,012,012,008 DEV-AVG=007 NT SWF=00:000  
XRAY-MAX= B7.2 @ 1610UT XRAY-MIN= B2.4 @ 2039UT XRAY-AVG= B3.1  
NEUTN-MAX= +000% @ 0005UT NEUTN-MIN= +000% @ 0005UT NEUTN-AVG= +0.0%  
PCA-MAX= +0.0DB @ 0005UT PCA-MIN= +0.0DB @ 0005UT PCA-AVG= +0.0DB  
BOUTF-MAX=55401NT @ 1425UT BOUTF-MIN=55359NT @ 1744UT BOUTF-AVG=55386NT  
GOES7-MAX=P:+144NT@ 1903UT GOES7-MIN=N:+004NT@ 0645UT G7-AVG=+096,+034,+012  
GOES6-MAX=P:+160NT@ 1737UT GOES6-MIN=N:-074NT@ 0230UT G6-AVG=+112,-009,-041  
FLUXFCST=STD:115,120,120;SESC:115,120,120 BAI/PAI-FCST=005,005,025/010,010,025  
KFCST=2114 4122 2114 4121 27DAY-AP=008,005 27DAY-KP=2332 2222 1121 1212  
WARNINGS=  
ALERTS=  
!!END-DATA!!

NOTE: The Effective Sunspot Number for 27 APR 93 was 62.5.  
The Full Kp Indices for 27 APR 93 are: 2- 1+ 2- 1o 2o 2- 2- 1+

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Date: 28 Apr 1993 21:47:51 GMT  
From: usc!howland.reston.ans.net!noc.near.net!transfer.stratus.com!sw.stratus.com!  
fms@network.UCSD.EDU  
Subject: Hamfest Help  
To: info-hams@ucsd.edu

In article <9304271532.aa26172@FSAC3.PICA.ARMY.MIL>, cfishman@pica.army.mil (Clark Fishman, FSAC-FCD) writes:

> When is the Rochester, New Hampshire fest (used to be Dearfield)  
>  
> Clark Fishman WA2UNN cfishman@pica.army.mil

Hi Clark,

HossTraders (or, as I understand some people are calling it, "Deerchester") is May 7-8, 1993. Gates open at noon on Friday, May 7 for buyers and sellers both. Entry fee is \$5 per person, camping is allowed (or at least it had better be allowed -- we're bringing the pop-up camper! :-)

Dunno about how to get there -- anybody got good directions to Rochester, NH?

73 de Faith N1JIT

--

Faith M. Senie                      InterNet: fms@vos.stratus.com  
Stratus Computer, Inc.          InterNet: fms@hoop.sw.stratus.com  
55 Fairbanks Blvd.              Pkt Radio: n1jit@wa1phy.ma.usa.na  
Marlboro, MA 01752              Phone: (508)460-2632

"I'm afraid I don't know very much about Romulan Disruptor settings" --Spock

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Date: 28 Apr 93 17:47:50 EDT  
From: psinntp!psinntp!arrl.org@nyu.arpa  
Subject: Hosstraders Flea Market (Was: Hamfest Help)  
To: info-hams@ucsd.edu

cfishman@pica.army.mil (Clark Fishman, FSAC-FCD) writes:

>When is the Rochester, New Hamshire fest (used to be Dearfield)

>

>Clark Fishman WA2UNN    cfishman@pica.army.mil

>

>

Hosstraders is next Friday and Saturday, May 7 and 8. See you there!

73,  
Jim, KR1S

--

jkearman@arrl.org

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Date: Wed, 28 Apr 1993 19:48:01 GMT  
From: sdd.hp.com!col.hp.com!news.dtc.hp.com!srngenprp!alanb@decwrl.dec.com  
Subject: Measuring SWR on Open Wire  
To: info-hams@ucsd.edu

Chuck Hanavin (hanavin@huey.udel.edu) wrote:

: For a field theory experiment, we would like to measure the  
: SWR on a 30 foot section of open wire line.

The field strength meter likely won't do a good job of measuring the voltage DIFFERENCE between the two wires, which is what you are trying to measure. Try this: Get a physically-small, high-sensitivity panel meter and kludge up an RF detector to feed it. Using short connections, alligator-clip the assembly to the two feedline wires. By moving the connection points up and down the feedline, find the ratio of maximum to minimum voltage, which is equal to the SWR.

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: Hooking a SWR bride between the
: transmitter and line shows about 1.2 to 1 SWR
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AL N1AL

In article <1993Apr28.134050.14050@udel.edu>, hanavin@huey.udel.edu (Chuck Hanavin) wrote:

> For a field theory experiment, we would like to measure the  
> SWR on a 30 foot section of open wire line.  
> We are using a frequency of 146.00 Mhz  
> The open wire  
> line has 9cm spacing with air dielectric, giving roughly  
> a 540 ohm impedance. We were hoping to terminate it with  
> a 540 ohm resistor, and using a field strength meter to measure  
> the voltage maxs and mins along the line. Theory says, the  
> electric field should be relatively constant along the line with  
> the matched load, but we are seeing large variations of field  
> strength along the line. Hooking a SWR bridge between the  
> transmitter and line shows about 1.2 to 1 SWR

Chuck-

Your field strength approach may work, but you need to devise a consistent method of coupling to the transmission line. The coupling should be "loose" enough not to upset the voltage distribution on the line, and should be repeatable.

You didn't mention one ingredient for calculating impedance of a transmission line - the diameter of the conductors. If you didn't consider both conductor diameter and spacing, your formula may be in error, which might account for your discrepancy. A third ingredient, dielectric constant, doesn't apply to the open wire configuration, since it equals one.

By one definition, SWR is the ratio of load resistance to transmission line characteristic impedance, assuming a purely resistive load. Therefore, if your voltage varies along the line, you haven't satisfied the requirement.

Another thing about your posting - you mention hooking up an SWR bridge. Most common Ham bridges are designed for 50 ohm co-axial transmission lines. If you connected such a bridge to an open wire line, the results would be hard to predict. Needless to say, most school lab experiments involving SWR, probably use co-axial hardware, including slotted lines and voltage probes. I think that making those measurements on open wire line, is quite a challenge!

The typical SWR bridge isn't actually a "bridge" in the sense of a Wheatstone bridge. It is usually a "reflectometer", that has both inductive and capacitive coupling to the transmission line. It actually senses forward and reflected power. It has a scale calibrated in SWR, rather than requiring you to do the calculation. If you don't already have a balanced bridge of the correct impedance, you may be able to construct one using a section of the open wire feedline being measured.

73, Fred, K4DII



fred-mckenzie@ksc.nasa.gov

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Date: Wed, 28 Apr 1993 17:26:47 GMT  
From: mvb.saic.com!unogate!news.service.uci.edu!usc!howland.reston.ans.net!  
sol.ctr.columbia.edu!jabba.ess.harris.com!mlb.semi.harris.com!  
controls.ccd.harris.com!bal@network.UCSD.EDU  
Subject: Need a copy of PRB1...  
To: info-hams@ucsd.edu

Bob McGwier (n4hy@wahoo.ccr-p.ida.org) wrote:

: Call the ARRL. They will provide you with a copy of PRB-1, and copies  
: of judgments that will serve as precedents to make the township officials  
: wary. Then go before your local zoning board and get a variance.

Sometimes getting a variance is more trouble than it is worth...

I live in a small rural town that restricts any structure to 35 feet. I  
obtained enough used tower sections ( at a very resonable price )  
to go up to 70 feet. At the time, I did not know of the restriction. Before  
I put up the tower, I went to see the town building inspector to obtain  
a permit. (Yes, the town is so small we only have one inspector and he works  
half days.) It was at this time I learned of the restriction. I was told  
that I could go higher, provided that I got the equivalent to a variance.

I have been down this road before with the town when I built my house. To  
get a variance, the town requires about 4-6 months of time, a couple of hours  
going through property records, and \$175.00.

Considering the extra \$175 and no guarentee that I would get the variance,  
I opted for selling off the extra sections of tower and living with a  
shorter tower. I may later decide that it is worth it and add sections!

--

Bruce Lifter  
blifter@ccd.harris.com

.....  
KD4WLF/AA

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Date: 28 Apr 93 23:50:12 GMT  
From: sun-barr!news2me.EBay.Sun.COM!cronkite.Central.Sun.COM!texsun!  
exucom.exu.ericsson.se!s12b04!exualan@decwrl.dec.com  
Subject: Possible to parallel x-formers??

To: info-hams@ucsd.edu

Hi,

In the never ending quest to pinch a penny I am trying to avoid buying a 18V, 20Amp transformer, for my future 13.8V power supply.

In the junk box sit 2 different 10Amp (appx.), 18V (appx.) used transformers. The question: Can I wire them in parallel? If so, which is better, before or after the bridge rectifier (obviously, if after, then I will need 2 bridges). Also, how much difference will a volt or 2 in the secondary make? I do have access to the windings so adjustments are possible.

Speculations welcome, as well as first hand info but please identify. Answers to me directly or to News as you see fit.

Thanks,

Alan Malkiel, KE5JL

e-mail exualan@exu.ericsson.se

-----  
Date: 29 Apr 1993 05:08:38 GMT  
From: dog.ee.lbl.gov!overload.lbl.gov!agate!darkstar.UCSC.EDU!cats.ucsc.edu!  
haynes@network.UCSD.EDU  
Subject: Possible to parallel x-formers??  
To: info-hams@ucsd.edu

It's not a good idea unless the transformers are identical, and even then it's probably not a good idea. If the output voltages are at all different, even at no load you'll get current circulating between the secondary windings, causing heating. Even if the open-circuit voltages are equal they probably won't be equal when current is drawn.

If you do the paralleling after the rectifiers they you get rid of the circulating currents at no load; but you still have the problem of getting them to share the load equally.

--

haynes@cats.ucsc.edu

haynes@cats.bitnet

"Ya can talk all ya wanna, but it's dif'rent than it was!"

"No it aint! But ya gotta know the territory!"

Meredith Willson: "The Music Man"

-----  
Date: Wed, 28 Apr 1993 00:57:26 GMT

From: medar!n8mdy!wpeloqui@uunet.uu.net  
Subject: Request Mods for IC-W21AT  
To: info-hams@ucsd.edu

Hello,

I am looking for any mods that can be made to an  
ICOM IC-W21AT hand held.

Thanks,

Willie Peloquin

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Willie Peloquin            PP-ASEL | I'm not a kid anymore, but this ain't no  
wpeloqui@medar.com        | midlife crisis, because whiskey and women  
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Date: Wed, 28 Apr 1993 12:33:38 GMT  
From: elroy.jpl.nasa.gov!sdd.hp.com!ncr-sd!ncrcae!ncrhub2!law7!jra@decwrl.dec.com  
Subject: Side-mounted VHF antennas  
To: info-hams@ucsd.edu

I recently saw an ad in one of the ham magazines for a line of VHF/UHF  
antennas designed for side mounting on a tower. I believe it's an all  
metal design, a folded dipole or somesuch. Now that I'm looking for an  
antenna that will be sidemounted, of course I can't find the ad anywhere.

Can anyone point me to the company that makes these antennas?

Thanks.

--

John R. Ackermann, Jr.            Law Department, NCR Corporation, Dayton, Ohio  
(513) 445-2966                    John.Ackermann@daytonoh.ncr.com  
Packet Radio: ag9v@n8acv.oh      tcp/ip: ag9v@ag9v.ampr [44.70.12.232]

-----  
Date: Wed, 28 Apr 1993 21:07:13 GMT  
From: iris.mbvlab.wpafb.af.mil!blackbird.afit.af.mil!tkelso@uunet.uu.net  
Subject: Two-Line Orbital Element Set: Space Shuttle  
To: info-hams@ucsd.edu

The most current orbital elements from the NORAD two-line element sets are  
carried on the Celestial BBS, (513) 427-0674, and are updated daily (when

possible). Documentation and tracking software are also available on this system. As a service to the satellite user community, the most current elements for the current shuttle mission are provided below. The Celestial BBS may be accessed 24 hours/day at 300, 1200, 2400, 4800, or 9600 bps using 8 data bits, 1 stop bit, no parity.

Element sets (also updated daily), shuttle elements, and some documentation and software are also available via anonymous ftp from archive.afit.af.mil (129.92.1.66) in the directory pub/space.

STS 55

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1 22640U 93 27 A 93117.91666666 .00044808 00000-0 13489-3 0 63
2 22640 28.4614 259.3429 0005169 259.6342 61.8074 15.90673799 201
```

--

Dr TS Kelso  
tkelso@afit.af.mil

Assistant Professor of Space Operations  
Air Force Institute of Technology

-----  
Date: 28 Apr 93 20:15:24 GMT

From: sdd.hp.com!cs.utexas.edu!usc!howland.reston.ans.net!gatech!destroyer!

cs.ubc.ca!unixg.ubc.ca!unixg.ubc.ca!bkwong@decwrl.dec.com

To: info-hams@ucsd.edu

References <C5qurA.6wr@feenix.metronet.com>,

<C5uzJ6.HMt@murdoch.acc.Virginia.EDU>, <1993Apr27.220044.221@sfpp.com>destroye

Subject : Re: Cable TV Descrambler Sources?

>I have always been curious - other than by SEEING the box, can they really  
>tell? I've heard stories ranging from them connecting something to the cable  
>that can detect bootleg boxes to vans driving down the street equipped with  
>spectrum analyzers to sting operations where they broadcast a bogus offer for  
>something free on a channel that would otherwise be encrypted and wait and see  
>who calls. Is any of this true (except for the sting, which they actually did  
>in New York)?

>-Bob Longo

What some cable companies have done is send a signal spike through the cable system. Their own boxes obviously would be protected somehow, but the bootleg boxes would be affected. When the person calls in to report problems with the signal, the police would be on their way.

--

BRIAN W. KWONG

| Internet E-Mail Addresses:

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The University of British Columbia | bkwong@unixg.ubc.ca  
Vancouver, BC Canada | 71514.707@compuserve.com

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End of Info-Hams Digest V93 #514  
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